

Claims

1. Method for creating a fibrous suspension (10) used for producing a tissue web or a hygiene web, in which method the fibers contained in the fibrous suspension (10) are directly loaded with a filler in an online process in the tissue material preparation line through a chemical precipitation reaction (12).
2. Method according to claim 1, characterized in that crystalline precipitation product particles are produced in the online process.
3. Method according to claim 1 or 2, characterized in that the precipitation product is calcium carbonate.
4. Method according to claim 1, characterized in that to load the fibers of the fibrous suspension, calcium oxide and/or calcium hydroxide is added and the precipitation is initiated through carbon dioxide or a gas containing carbon dioxide.
5. Method according to claim 4, characterized in that the crystalline precipitation product particles are produced in the respective gas atmosphere without the introduction of mixing energy.
6. Method according to one of the preceding claims, characterized in that the fibrous suspension is fed to a treatment unit (14) comprising a fluffer, a refiner, a disperger and/or the like.
7. Method according to claim 6, characterized in that the fibers of the fibrous suspension are loaded with filler before or after the treatment unit (14) comprising a fluffer, a refiner, a disperger and/or the like.
8. Method according to claim 6, characterized in that the treatment unit (14) comprising a fluffer, a refiner, a disperger and/or the like is used at the same time as a reactor for the chemical precipitation reaction.
9. Method according to one of the preceding claims, characterized in that the calcium hydroxide is added to the fibrous suspension in liquid form.
10. Method according to one of claims 1 through 8, characterized in that the calcium hydroxide is added to the fibrous suspension in dry form.

11. Method according to one of the preceding claims, characterized in that the fibrous suspension (10), preferably the fibrous suspension (10) to which calcium hydroxide has been added beforehand, is fed to the treatment unit (14) comprising a fluffer, a refiner, a disperger and/or the like with a stock consistency that lies in a range of approx. 5 to approx. 60% and preferably in range of approx. 15 to approx. 35%.
12. Method according to one of the preceding claims, characterized in that the carbon dioxide or the gas containing carbon dioxide is added at a temperature that lies in a range of approx. -15 to approx. 120°C and preferably in a range of approx. 20 to approx. 90°C.
13. Method according to one of the preceding claims, characterized in that crystalline precipitation product particles with a rhombohedral form are produced.
14. Method according to one of the preceding claims, characterized in that crystalline precipitation product particles with a scalenohedral form are produced.
15. Method according to one of the preceding claims, characterized in that spherical crystalline product precipitation particles are produced.
16. Method according to one of the preceding claims, characterized in that a treatment unit (14) in the form of a disperger with two plates opposite to one another and rotating relative to one another and preferably in the form of a disperger with a rotor and a stator is used.
17. Method according to claim 16, characterized in that the dimensions of the crystalline precipitation product particles are influenced with the treatment unit (14).
18. Method according to one of the preceding claims, characterized in that crystalline precipitation product particles are produced, the maximum dimensions of which are in a range of approx. 0.05 to approx. 5 µm and preferably in a range of approx. 0.3 to approx. 2.5 µm.
19. Method according to one of the preceding claims, characterized in that crystalline precipitation product particles are produced with a

rhombohedral form with a respective edge length in a range of approx. 0.05 to approx. 2 μm .

20. Method according to one of the preceding claims, characterized in that crystalline precipitation product particles with a scalenohedral form with a respective length in a range of approx. 0.05 to approx. 2 μm and a respective diameter in a range of approx. 0.01 to approx. 0.5 μm are produced.
21. Method according to one of the preceding claims, characterized in that the fibrous suspension (10) is diluted with water in a radially outer area of the treatment unit (14) comprising two plates rotating relative to one another.
22. Method according to one of the preceding claims, characterized in that the stock consistency of the fibrous suspension (10) guided through the treatment unit (14) lies in a range of approx. 0.1 to approx. 50% and preferably in a range of approx. 5 to approx. 35%.
23. Method according to one of the preceding claims, characterized in that a constant supply of carbon dioxide or a gas containing carbon dioxide is ensured.
24. Method according to one of the preceding claims, characterized in that the carbon dioxide or the gas containing carbon dioxide is added under a pressure that lies in a range of approx. 0.1 to approx. 6 bar and preferably in a range of approx. 0.5 to approx. 3 bar.
25. Method according to one of the preceding claims, characterized in that in the course of the chemical precipitation reaction an at least essentially complete conversion of the referenced base materials calcium oxide or calcium hydroxide and carbon dioxide into the reaction products calcium carbonate and water is ensured by accordingly regulating or controlling the pH value of the fibrous suspension (10), preferably via the supply of carbon dioxide.
26. Method according to claim 25, characterized in that a pH value is established which lies in a range of approx. 6 to approx. 10 and preferably in a range of approx. 7 to approx. 8.5.

27. Method according to claim 25 or 26, characterized in that the energy introduced for the chemical precipitation reaction lies in a range of approx. 0.3 to approx. 8 kWh/t and preferably in a range of approx. 0.5 to approx. 4 kWh/t.
28. Method according to one of the preceding claims, characterized in that dilution water is added and mixed with the fibrous suspension (10) in order ultimately to obtain a stock consistency of the diluted fibrous suspension (10) which lies in a range of approx. 0.1 to approx. 16% and preferably in a range of approx. 2 to approx. 6%.
29. Method according to one of the preceding claims, characterized in that the treatment unit (14) is operated such that its rotating plate or rotor has a circumferential speed at the radially outer edge in a range of approx. 20 to approx. 100 m/s and preferably in a range of approx. 40 to approx. 60 m/s.
30. Method according to one of the preceding claims, characterized in that the width of the gap between the two plates of the treatment unit (14) rotating relative to one another is in a range of approx. 0.5 to approx. 100 mm and preferably in a range of approx. 25 to approx. 75 mm.
31. Method according to one of the preceding claims, characterized in that the diameter of the two plates of the treatment unit (14) rotating relative to one another is in a range of approx. 0.5 to approx. 2 m.
32. Method according to one of the preceding claims, characterized in that the reaction time for the chemical precipitation reaction lies in a range of approx. 0.01 min to approx. 1 min and preferably in a range of approx. 0.1 s to approx. 10 s.
33. Method according to one of the preceding claims, characterized in that free calcium carbonate, i.e., not deposited in and/or on the fibers, is washed out.
34. Tissue product made from a fibrous suspension (10) produced according to the method according to one of the preceding claims.